# This Page Is Inserted by IFW Operations and is not a part of the Official Record

#### **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

#### IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents will not correct images, please do not report the images to the Image Problems Mailbox.

THIS PAGE BLANK (USPTO)

#### (12) PATENT ABSTRACT (11) Document No. AU-A-59440/98

(19) AUSTRALIAN PATENT OFFICE

(54) Tille A RISK BASED CONTROL SYSTEM

International Patent Classification(8) (51)° G06F 017/60

(21) Application No : 59440/98

(22) Application Date 20/03/98

(30) Priority Data

(31) Number PO5788

(32) Date 20/03/97

(33) Country

AU AUSTRALIA

(43) Publication Date: 24/09/98

(71) Applicant(s)

BERGMAN VOYSEY & ASSOCIATES PTY LIMITED

(72) Inventor(s)
NAME NOT GIVEN

(74) Altorney or Agent

F B RICE & CO. 605 Darling Street, BALMAIN NSW 2041

(57) Claim

1. A method of using a computer equipped with a relational database to provide control output to address the threats confronting a system or organisation, comprising the steps of:

creating a series of relational database entities which describe the system:

analysing the system to derive data relevant to the entities; and reporting from the database to produce the control output; wherein the entities and data concern the following:

the objectives of the system arranged in hierarchies and are each labelled to identify their position in the hierarchy:

the processes of the system arranged in hierarchies and are each labelled to identify their position in the hierarchy:

the resources used to perform the processes;

the locations, persons and positions involved with the objectives processes and resources:

the risks those processes and resources are subject to:

the consequences should those risks materialise;

the controls which mitigate the risks; and

assessments:

cach combination of objective, process and risk linked to the consequence, resource, control and recommendation entities; and wherein:

the analysis involves the use of the combinations of objective, process and risk, reporting involves a link between the consequences and

assossment entities:

のでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmのでは、100mmので 100mmのでは、100mm

the control output includes a list of the exposures and scenarios which have an unacceptable risk associated with them.

ther ind eliming

SOUTH TO STATISTICS A TRETTLY MALEURING

连点的形式影響

Apply the second

Comment of the state of the state of the state of

and the common of the state of

### **AUSTRALIA**

### Patents Act 1990

#### **BERGMAN VOYSEY & ASSOCIATES PTY LIMITED**

#### **ORIGINAL**

## COMPLETE SPECIFICATION STANDARD PATENT

Invention Title:

A risk based control system

The following statement is a full description of this invention including the best method of performing it known to us:

| This invention concerns a method using a computer to provide risk based control output. In another, aspect it concerns a computer system for use in risk based control.  **Background Art***  **Risk is measured in terms of the likelihood and consequence of an occurrence taking; ito consideration existing control measures. Risk management is an interactive process consisting of well-defined steps which, taken in sequence, support better decision-making by sontributing a greater insight into risks and their impacts. Risk management can be applied to any situation where an organisation existent contains a fail of which is considered when identifying risk. **Gauss of risk include the angle following:**  **Risk may arise from internal or external sources.**  **Risk may arise fr |   |  |
|--|---|--|
| hased control output. In another aspect it concerns a computer system for use in risk based control.   | ·   |  |
| Background Art and a proposition of the likelihood and consequence of an occurrence taking a to consideration existing control incassures. Risk management is an interactive process consisting of avelledefined steps which taken in sequence, support better decision-making by sontributing a greater insight into risks and their impacts. Risk management can be applied to any situation where an organisation or system can unintuitied losses or maximise opportunities.  Risk may arise from internal or external sourcess. Both sources of risk need to be considered when identifying risks. Causes of risk include the anglorism and accident.  Natural (Delay, Interruption, Loss) sinclindes earthquaker, lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) sinclindes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) sinclindes fraud.  theft, riot and sabotage.  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and adomestic factors such as interest rates and unemployment in a read-  |   |  |
| Hackground Art has a management palie on eit mercentiff en an endetit.  Risk is measured in terms of the likelihood and consequence of an occurrence taking into consideration existing control measures. Risk management is an interactive process consisting of avell-defined steps which, taken in sequence, support better decision-making by contributing a greater insight into risks and their impacts. Risk management can be applied to any situation where an organisation/or-system can uninimise losses or maximise opportunities.  Risk may arise from internal or external sources. Both sources of risk need to be considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk include the angle of the considered when identifying risks Causes of risk includes the angle of the considered when identifying risks Causes of risk includes orror, omission and accident.  Unintentional Human Behaviour (Unauthorised Acts): includes fraud, theft, riot and sabotage.  Other sources of risk include:  (Other sources of risk include:  (Other sources of risk includes international exchange rates and adomestic factors such as interest rates and unemployment in a read adomestic factors such as interest rates and unemployment in a read adomestic factors such as interest rates and unemployment in a read adomestic factors such as interest rates and unemployment in a read adomestic factors such as interest rates and unemployment in a read adomestic factors such as interest rates and unemployment in a read adomestic factors.   |   |  |
| Risk is measured in terms of the likelihood and consequence of an occurrence taking into consideration existing control measures. Risk management is an interactive process consisting of well-defined steps which taken in sequence, support better decision-making by contributing a greater insight into risks and their impacts. Risk management can be applied to any situation where an organisation of system can minimized by secondarium opportunities.  Risk may arise from internal or external sources. Both sources of risk need to be considered when identifying risks. Causes of risk include the arise following:  Natural (Delay, Interruption, Loss) sincludes earthquaked lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality Feincludes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acids), includes fraud, theft, riot and sabotages  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unamployment.   |   |  |
| Risk is measured in terms of the likelihood and consequence of an occurrence taking into consideration existing control measures. Risk management is an interactive process consisting of well-defined steps which, taken in sequence, support better decision-making by gentributing a greater insight into risks and their impacts. Risk management can be applied to any situation where an organisation consistent can minimize losses or maximise opportunities.  Risk may arise from internal or external sources, a Both sources of risk need to be considered when identifying risks. Gauses of risk include the confollowing:  Natural (Delay, Interruption, Loss) sinclindes earthquaked lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality Simicludes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts), sincludes fraud, theft, riot and sabotage.  Other sources of risk include:  Proceedings of the control  | the specific come a promodulity or all the  | graph Africa and the Armer of t |
| occurrence taking into consideration existing control aneasures. Risk management is an interactive process consisting of avell-defined steps which, taken in sequence, support better decision-making by contributing a greater insight into risks and their impacts. Risk management can be applied to any situation where an organisation of system can animinise less essor maximise opportunities.  Risk may arise from internal or external sources. Both sources of risk need to be considered when identifying risk. Causes of risk include the modellowing.  Natural (Delay, Interruption, Loss) sinclindes earthquake hightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) sincludes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) sincludes fraud, theft, riot and sabotage.  Other sources of risk include:  Definitional Financial - includes international exchange rates and adomestic factors such as interest rates and, unemployment, research and additional decisions and sinterest rates and, unemployment, research and additional decisions and sinterest rates and, unemployment, research and additional decisions and animomal exchange rates and domestic factors such as interest rates and, unemployment, research and additional decisions and animomal exchange rates and domestic factors such as interest rates and, unemployment, research and additional decisions and animomal exchange rates and domestic factors such as interest rates and, unemployment, research and additional decisions and additional deci |   |  |
| management is an interactive process consisting of well-defined steps which, taken in sequence, support better decision-making by contributing a greater insight into risks and their impacts. Risk management can be applied tolany situation where an organisation of system can minimise losses or maximise opportunities.  Risk may arise from internal or external sources. Both sources of risk need to be considered when identifying risk. Causes of risk include the antifollowing:  Natural (Delay, Interruption, Loss) sincludes earthquake lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) sincludes error, omission and accident.  Intentional Human Behaviour (Unauthorised, Acts), includes fraud, theft, riot and sabotages  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and, unemployment, v. 2003.  |   | •  |
| taken in sequence, support better decision-making by contributing a greater insight into risks and their impacts. Risk management can be applied totany situation where an organisation or system can minimise lesses for maximise opportunities.  Risk may arise from internal or external sources of Both sources of risk need to be considered when identifying risk. Causes of risk include the systemal (Dolay, Interruption, Loss) sinclindes earthquake lightnings strike, storm, flood and drought.  Dunintentional Human Behaviour (Substandard Quality) sincludes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acids) sincludes fraud. theft, riot and sabotage.  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and adomestic factors such as interest rates and, unemployment, possession and adomestic factors such as interest rates and, unemployment, possession and adomestic factors such as interest rates and, unemployment, possession and adomestic factors such as interest rates and, unemployment, possession and accident.  |   |  |
| insight into risks and their impacts. Risk management can be applied tolany situation where an organisation or system can minimise lesses or maximise opportunities.  Risk may arise from internal or external sources. Both sources of risk need to be considered when identifying risk. Causes of risk include the antifollowing:  Natural (Delay, Interruption, Loss) - includes earthquaker lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality's includes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) - includes fraud, theft, riot and sabotages  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and adomestic factors such as interest rates and unemployment.  |   |  |
| situation where an organisation of system can minimise losses or maximise opportunities. The share in the state of the sta | · · · · · · · · · · · · · · · · · · ·   |  |
| Risk may arise from internal proximal was suite with the sources of risk need to be considered when identifying risk. Causes of risk include the an following:  [Natural (Delay, Interruption, Loss)] - includes earthquake lightnings strike, storm, flood and drought.  [Unintentional Human Behaviour (Substandard Quality)] includes error, omission and accident.  [Intentional Human Behaviour (Unauthorised Acts)] includes fraud.  [Intentional Human Behaviour (Unauthorised Acts)] includes fraud.  [Other sources of risk includes [Intentional Acts]] includes and failure.  [Intentional Financial - includes international exchange rates and address and failures.  [Intentional Financial - includes international exchange rates and address and failures.]   |   |  |
| Risk may arise from internal or external sources. Both sources of risk need to be considered when identifying risk (Causes of risk include the are following:  Natural (Delay, Interruption, Loss) - includes earthquake lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) includes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) rivelactes fraud.  theft, riot and sabotage, and are because the profited from the first and sabotage.  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and and adomestic factors such as interest rates and, unamployment, recently and adomestic factors such as interest rates and unamployment.   | situation where an organisation or system ca  | n, minimise losses or maximise 💎   |
| need to be considered when identifying risk. Causes of risk include the an following:  Natural (Delay, Interruption, Loss) - includes earthquake lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) includes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) - includes fraud.  theft, riot and sabotages  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unemployment as a major and domestic factors such as interest rates and unemployment as a major and domestic factors such as interest rates and unemployment as a major and domestic factors such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and a major and a interest rates and unemployment as a major and a major  | opportunities, and and the about the date of the date | dress feld the shift of challens in  |
| need to be considered when identifying risk. Causes of risk include the an following:  Natural (Delay, Interruption, Loss) - includes earthquake lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) includes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) - includes fraud.  theft, riot and sabotages  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unemployment as a major and domestic factors such as interest rates and unemployment as a major and domestic factors such as interest rates and unemployment as a major and domestic factors such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and such as interest rates and unemployment as a major and a major and a interest rates and unemployment as a major and a major  | Andrews Risk may arise from internal proxtor  | nalsources. Both sources of risk   |
| Satural (Dolay, Interruption, Loss) sinclindes earthquakes lightnings strike, storm, flood and drought.  Unintentional Human Behaviour (Substandard Quality) sinclindes error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) sinclindes fraud.  Intentional Human Behaviour (Unauthorised Acts) sinclindes fraud.  Other sources of risk includes has a horizontal and failure.  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and, unemployment.   |   |  |
| Strike, storm, flood and drought.  Dunintentional Human Behaviour (Substandard Quality) includes  error, omission and accident.  Intentional Human Behaviour (Unauthorised Acts) includes fraud.  theft, riot and sabotages  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and salomestic factors such as interest rates and unemployment.  | following: The same fitting to be a single  | ម៉ូក ដូច្នេះ ស្ថិត សម្រាក់ ប្រាក់  |
| Unintentional Human Behaviour (Substandard Quality) includes  orror, omission and accident.  Intentional Human Behaviour (Unauthorised Asts), includes fraud.  thoft, riot and sabotages  Other sources of risk includes  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unemployment.   | 💎 🏸 (Natural (Dolgy, Interruption, Loss) - i  | ncliidos gartliquakos lightiings 🧪   |
| Intentional Human Behaviour (Unauthorised Acts) - includes fraud.  theft, riot and sabotage, and reported behaviour and reported by the land to the la |   | · · · · · · · · · · · · · · · · · · ·  |
| Intentional Human Behaviour (Unauthorised Acts). includes fraud.  thoft, riot and sabotages and success of risk include:  Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unemployment.   | 🚃 👆 Unintentional Human Behaviour (Su   | bstandard Quality}}≟indudos  |
| Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unemployment.   | error, omission and accident. All Layder &  | कुम्हर्क एक मा उन्तुक भारता है। भारत   |
| Other sources of risk include:  Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and domestic factors such as interest rates and unemployment.   | Intentional Human Behaviour (Unau   | (horjsog Agts),-; includos fraud. 💎  |
| Technological - includes obsolescence, advances and failure.  Economic and Financial - includes international exchange rates and a domestic factors such as interest rates and unemployment.   | thoft, giot and sabotages and allow the bear  | det is construction of manage and a  |
| Economic and Financial - includes international exchange rates and solutions factors such as interest rates and unemployment.  | Other sources of risk include:  | Bungana malang albah berah ma  |
| domestic factors such as interest rates and unamployment.  | Technological - includes obsolescenc  | e, advances and failure.   |
|  | Economic and Financial - includes in  | ternational exchange rates and 🤊 👚   |
|  | domestic factors such as interest rates and, ur   | iginploymout. 1. 1970 254  |
| An estat caria accesa ambiera in accesa en contra contra conseguiración de la contra de la contra de la contra   |   |  |
| Commercial and Logal - includes liability and other contractual  | Commercial and Lagal - includes liab  | ility and other contractual 🚈 🥏  |

1.3.

Establish the context - This step establishes the strategies organisational and risk management context in which the rest of the process

will take place. Criteria against which risk will be assessed are established and the structure of the analysis is defined at the structure of the analysis.

Identify risks - Identify what, why and how things can arise as the basis for further analysis.

Analyse risks - Determine the existing management centrols and analyse risk in terms of likelihood and consequence in the confect of those controls. The analysis considers and analysis remains the controls.

(i) how likely is an event to happen and the gride to proceed

113

(ii) what aforthospotontial consequences and their magnitude was These elements the time combined to produce an estimated level of risk. (If you as up a termination of the latest of the grant of the consequences of the latest of the latest

Evaluate risks Compain estimated levels of risks against the pion the established criteria. Risk are then ranked to identify management priorities: If the levels of risk established and tow, then risks may tall into air acceptable category and treatment may not be required and are a level.

Treat risks - Accept and monitor low priority risks. For other risks developed and implemented a specific maragement plant which includes consideration of funding.

Monitor and review Monitor and review the performance of the risk management system and changes which might affect it as from 1978 to 1979 the

The risk management process has traditionally involved a more or less systematic collection of data and subsequent analysis by an experienced professional to produce a report.

. 1972 and the second appropriate for the first of the expect of the second of the sec

Summary of the Inventional and the second bears of the decrees

The present invention is a mothed efacing a computer equipped with a relational database to provide control output to address the threats confronting a system or organisation, comprising the steps of the steps.

system: The series of relational database entities which describe the series system:

the objectives of the system arranged in hierarchies and are each labelled to identify their position in the hierarchy?

and the execution of many particles are all and a strategic of the contractions.

35

5

10

15

20

25

|    | the processes of the system arranged in hierarchies and are each   |
|----|--|
|    | labelled to adoptify their position in the hierarchy:  |
|    | the resources used to perform the processes:   |
|    | the logations, persons and positions involved with the objectives  |
| 5  | ·  |
|    | the risks those processes and resources are subject to:  |
|    | the consequences should these risks anaterialise.  |
|    | the controls which mitigate the risks, and   |
|    | a passessingular, which was a sum and some of the self   |
| 10 | each combination of objective, process and risk linked to the  |
|    | consequence, resource, control and recommendation antities;  |
|    | and wherein:   |
|    | the analysis involves the use of the combinations of objective.  |
|    | process and risk, reporting involves a link between the consequences and   |
| 15 | assessment entities, and the participation of the subject of the s |
|    | the control output includes a list of the exposures and scenarios  |
|    | which have an unacceptable risk associated with them: have a reduced to the  |
|    | This provides the advantages that we recovered to the country of   |
|    | Management is able to identify those functions or processes within a   |
| 20 | system, such as an organisation, which are dependent on specific resources   |
|    | and the risks which those functions and resources the subject to decrease the  |
|    | Risk are evaluated in terms of likelihood and Monsequences   |
|    | Management is able to identify the most attrisk functions and resources.   |
|    | Risks can be avoided, transferred in partier in full, or mitigated by  |
| 25 | instituting additional controls to lower the likelihood or consequences or   |
|    | both likelihood and consequence.   |
|    | Risks can be properly managed and insurance risk financing costs   |
|    | kept to a minimum.   |
|    | In another aspect the invention, as currently envisaged, is a computer   |
| 30 | system for providing control output to address the threats confronting a   |
|    | system or organisation, comprising the second of the secon |
|    | a computer equipped with a data input means, a data processor and a  |
|    | relational database in which there are created a séries of relational database   |
|    | entities which describe the systems of the property of the angle of the transfer of  |
| 35 | wherein the entities and data/concern the following!   |

|     | $\mathfrak{J}$   |    |
|-----|--|----|
|     | en la la composition de la companya de la composition de la composition de la composition de la composition de   |    |
|     | the objectives of the system airlaight in hibrarchies and are each   |    |
|     | labelled to identify their position in the hierarchy:  |    |
|     | the processes of the system arranged in incrarchies and are each   |    |
|     | labelled to identify their position in the hidrarchy;  | ٠. |
| 5   | 🕬 the resources tised to perform the processes:  |    |
|     | the localions/persons and positions with the objectives  |    |
|     | processes and resonices when declaration and   |    |
|     | the risks those processes and resources are subject to:  |    |
|     | and the following the modes should those wisks materialise?  |    |
| 10  | the controls which mitigate the hisks and which in companies   |    |
|     | assessments.   |    |
|     | 🕡 🗆 gach combination of objective phocoss and risk tricked to the  |    |
|     | consequence, resources, control and recommendation entitless and wherein:  |    |
|     | the processor accesses the relational database; analyse's data relevant to the $\ell=1$  |    |
| 15  | entities using the combinations of objective, process and risk, and reports the  |    |
|     | control output using a link between the consequence and assessment elitities   |    |
|     | to produce a list of the exposures and scenarios which have an infacceptable   |    |
|     | risk associated with them? with warm shiften and difference and the second of the  |    |
|     | or encourage and respect to the property of th |    |
| 20  | Brief Description of the Drawings of the Annual Street Street Street Street  |    |
|     | An example of the nivention will now be described with reterence to  |    |
|     | the accompanying drawings, in which says all vittages on the collision which is a  |    |
|     | A Figure 1 is a schematic diagram of a computer embodying the  |    |
|     | invention; and we have been before his outlinear to the larger with the set of the larger to   |    |
| 25  | Figure 2 is schematic diagram of a relational database used by the   |    |
|     | invention, and it is used to be the heart of opening the saltest   |    |
|     | gradient der Artikansk franche in de Artikansk franche in de Artikansk franche in de Artikansk franche in de A   |    |
|     | Best Mode of the Invention ( ), as the street of the Mills of the Shark of   |    |
|     | Referring first to figure 1, the computant comprises a dairy processor?  |    |
| 1() | 2. data input means 3 and a monitor 4. In additionathere is a relational 100 280   |    |
|     | database 5 and a printer of the course of the following the printer of the course of t |    |
|     | 7. The joint these within the relational database 5 and their relationships 19.  |    |
|     | with each other are shown in more detail in Figure 2. Before alsystem can  |    |
|     | effectively be controlled; it is necessary toostablish a number of elements of   |    |

data relating to the entities of the system, for instance, the system or

organisation 10, the organisation levels 11 Tiperson 12 sposition 13; location 14 and process 15.

Trequired for the project, for example the processed division or branches in a Normally this is dictated by the structure of the organisation 10 and the manifestation to analysis required Each process, 15 of the system is assigned an organisation level.

Location tetaletails are recorded on the system to identify the location of the organisation 10 and its processes 45% positions 43 and resources 46% and the system maintains objective entities (17 kg/high describe) the specific corporate vision imissions; corpoiate goals; strategies, and tactics. Objectives 45% are particularly relevant when risks 48% are assessed at a 40% strategic level.

15

20

25

30

35

A process 15 may be a group of tasks, assection of gedepartment, a department, a division or an organisation as a whole. The processes are arranged in a hierarchy whereby sub-processes are linked to any given process of which is part.

Risks 18 identified for assessment are recorded in the system. These could be exposures or scenarios.

The analysis 19 of risks 18 is asually performed in the context of the objectives 17 and processes 15. The combinations 20 of the objectives, processes, and risks are maintained as an entity in the system. Risks are assessed 19 in the terms of their likelihood of occurrence, their worst case impact and their overall loss control. They may also have an estimated maximum potential loss quantitatively recorded 2.76.4.

. 3

: :

Risks van berassessed 19 attrastrategic level operational level or specifically for business interruption. When risks are assessed at a strategic level, the importance of the objective 17 is also obniside and the level.

In the identification and analysis of risks; their consequences 22 are recorded in the system. Each consequences 22% hinked do an assessment 19.

This link is essential to describe the outcome of an event happening. It also enables the calculation of maximum potential loss.

Resources Iti are required to perform a process 15. Resources include people, systems whether manual or computerised, information and capital assets. Key resources of a process are assessed 23 as to the process's level of dependence on these resources, the probability of losing the resource and the adequacy of its backup/risk control.

Controls 24 are policies; standards and procedures to prevent, detect or correct the consequences of risk. The effectiveness:21 of controls in the context of the objective, process and risk combinations 20 and the resources 16 are established to determine the level of risk. Any control which is not adequate will require treatment! This treatment or corrective action is recorded as a recommendation 26. The recommendation holds information. relating to the priority for corrective action, costs, the start and end date (estimated and actual), and the position 13 responsible for implementation.

To prioritise risks, the system calculates the level of risk by taking into account the assessments of likelihood, impact and control, and where applicable, the importance factor of the objective or the level of dependence on a resource.

#### 20 Example of using the system

5

10

15

25

30

35

The Total Personnal Services Company is a computer payroll services bureau. The company has three divisions:

finance/administration division:

marketing division: and a track to the same

payroll services division.

The Company's objectives include:

being the leading provider of payroll services which it hopes to accomplish by: A company of the company of the first by the company

capturing 90% of the market by 4999; he are the finance of

providing quality services to its clients; and

providing an excellent work environment, here is a second with

The risk scenarios for Total Personnel Services include:

business interruption: A state of the state

delay interruption loss:

errors, and omissions and the control of the

a failure to achieve objective as a construction

fire:

flood/water damage; and

contractual liability.

The processes for the Payroll Services Division include:

5 client liaison;

10

computer operations; and

computer programming.

The key resources required by the Payroll Services Division to perform its processes include:

PC Pay System

PC Server/Terminals/Printer

**Key Personnel** 

Office Facilities.

Each objective is assessed as to its operational risk, strategic risk and combined risk. A raw score and an average score are calculated as follows:

| e | • | ١ | ١ | ١ |
|---|---|---|---|---|
| ٠ |   | ė | ٠ |   |
| 7 | 7 | • |   |   |

|  |       |  | (Apadive calls  | All Leselv  |  | Operational                                  |                           | Strategy.  | 1 Seming, Both   |
|--|-------|--|---|---|--|--|---------------------------|--|--|
| national parties   | Pac J |  | (Nepother (Alpethre least) plans importance                     | e specrativinal   | State of the state | Combined<br>Fish Score                       | erna e erakes isi         | Average States   | Combined Real  |
| in the second se |       | \$<br>•  | To capture tieth of the market by 1900                          | 0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.00<br>0.0 | i<br>S<br>Katilja vil k<br>Hoo ve ko   | ### ### ##############################       |                           | \$<br>d ::::::::::::::::::::::::::::::::::::                       |  |
| 8 f <del>V</del>   | -     | <b>.</b><br>5  | To prevede quality orrerees to cheerson the tree for the cheers | R<br>S  | ទី ៩៤ ខែ២២<br>១០ ១៣ ខែ២២   | 12)<br>2<br>5                                | i.<br>□ .¥43              |  | 23<br>- 0  |
| ş. f. <b>v</b> .,  | **    |  | le preside an recelbent weaking<br>receivement for all staff.   | 6% 8  | <b>.</b>   | etektaki un r<br>Buran<br>Tabberak 18        |                           | nga na dia si<br>19 dia simula<br>18 dia sina si<br>18 dia sina si |  |
|  |       | Months of the second of the se | Total   | (8)   | Mario (1 ) 61<br>Color (1 ) 1 (1 )<br>Color (1 ) 1 (1 )  | 8000 4 13<br>1,8 <b>3</b> 8 12<br>1302 18 13 | ng sa jawa.<br>Talah maga | į.   | The state of the s |

addition,

198

(1965) 1975 · 第二章

The consequences and comment details are the

| F: 12      | Prince Same  |                                       | (I) exelve   |                 |        |     | ,              | 7  | !          |                |               | •     | :        |
|------------|--|---------------------------------------|--|-----------------|--------|-----|----------------|----|------------|----------------|---------------|-------|----------|
| ,          | en entre construction de la cons | elecur,                               | معرن و رسه سحفو  | į . į           |        | 7   | 3              |    | . <b>.</b> |                |               | -     | - 1      |
|            |  | \$ A.                                 |  | .: ,            |        |     | )<br><b>L</b>  |    |            | :              | , ;           | Ì     | E        |
| ' Int I an | flood Laterin  | , <b>L</b>                            |  | ,               |        |     | 111)           |    |            |                |               |       |          |
|            | Imims letterfrugetriet, loca (1881),   | . <u> </u>                            | Partitional fear of perspect of  | ( Charleston    | . La a | 17  | .,             | j  |            |                | * 3           |       |          |
| •          | in the international loss 1111.  | . €                                   |  |                 |        | - 3 |                |    | •          |                |               | 4 .   |          |
|            |  |                                       |  |                 |        |     |                | ٠. | -          | ٠.             |               | 5     |          |
| • .        | THE PER CONTRACTOR OF THE PERSON OF THE PERS |                                       | Ar illinop   | 3               |        |     | • ``} <i>!</i> | •  |            | \$. S          |               |       |          |
| ,,,        | Love the Walter Land Hilly   | ×                                     | Sula ! and   | A Section       |        |     | (R)            |    |            | - \$           |               | 4;    |          |
|            | Company of the stage of the sta | <b>建</b><br>全                         | ت<br>الله<br>الله الله<br>الله الله  | 1               |        |     | ) 4 }          |    |            | #10            |               | •     |          |
| ٠          |  |                                       |  | .e.             |        |     | z/31           |    |            | į · <i>y</i> į |               | Fil   |          |
| •          |  | <b>.</b>                              | Distriction of the State of the | s***            |        | -   | et à           |    |            | 7.3            | 4.5           | ر پُو |          |
|            | Beleite fant beriffenten fant berichen   |                                       | likely to a there , bearing  |                 |        |     | 2.3            |    |            | 1 mg .         |               | ., ;  |          |
|            |  | Š                                     | Thous deadlines met  |                 |        |     | 117            |    |            |                |               | Ġ.    |          |
| is e       |  |                                       |  | - ";            |        |     | \$ . <i>f</i>  |    |            | <i>3</i>       |               | . •   |          |
|            |  |                                       |  |                 |        |     | en graf.<br>Je |    |            |                |               | ;:.   |          |
|            |  |                                       | Photote deadlines not  |                 |        |     | * å.           |    |            | : :            | i i           |       |          |
|            | esterior and page flater   |                                       |  | ۳ <sub>);</sub> |        |     |                |    | ; ×        |                | r ` <u>\$</u> |       |          |
| s .<br>:   |  |                                       | The second secon | Σ*λ             |        |     | (j.)           |    | . e/^^ -   |                | ·, :          |       |          |
| ) i        | , ,  | Ŷ.                                    |  |                 |        |     |                |    | . ناند     |                |               |       |          |
| 11         |  |                                       | 大学 はない かいない 日本日  |                 |        |     | 1378<br>÷.     |    | : ; . `    |                |               |       |          |
| · ;        | The state of the state of the town of the state of the   | ·                                     | white the course garden  | ,               |        |     |                |    |            |                |               |       |          |
| ·,         |  |                                       |  | ıŞ.             |        |     | į              |    | 7 A        |                | : 13×         |       |          |
|            |  | Ē.                                    |  |                 |        |     | 7, 7           |    | :          |                | ·             |       |          |
| Cond des   | Karas ar skrag argadaring  | <b>.</b>                              | 10 May 1   | , "T            |        |     | , d ,          |    | ن د        |                | ,             |       |          |
|            | The terrestant land the  |                                       | transcription for each featurest   | a series        |        | •   |                |    | ٠,         | )<br>          | •             | ا     |          |
| •          |  | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | Person was all a feet for  | •               |        | . * |                | -  | ; 1        | •              | ,             |       | *        |
|            |  | ·<br>·                                |  |                 |        |     | ere.<br>Bera   | -  | :          | 7 - 4<br>7     |               | •     | 27.7     |
|            |  |                                       | E des les des les les des des des les les les les les les les les les l  | 1               | •      |     | ;; -           |    |            | <i>: .</i>     |               |       | Cassille |
|            |  | 4                                     |  |                 |        |     |                |    |            | •              |               |       |          |

The key resources are then assessed as to the depending sor the Payroll Services processes on them, the likelihood of the resources being lost or becoming unavailable, the status of backupirisk control, and the priority for business recovery planning.

Once assessed, a number of reports can be produced. One of these reports is the Key Resources at Risk report which shows

resource descriptions

functions or processes which use the resource

level of dependence, likelihood, and backup risk control's

business recovery planning priority factors expressed in currency of descriptioning

The key controls which mitigate (prevent, detect or correct) the consequences of the risk are then entered into the system against each resource and exposure. These are assessed as to its current effectiveness to nutigate the risk. Where the control is not effective (ie "borderline" or "inadequate" or "non-existent"), the corrective action is also recorded

A number of reports can be produced from the system. These include:

(i) A Risk Mitigation Report which shows:

processes and related exposures, resources and consequences with calculated likelihood, impact, control, estimated maximum potential loss, calculated level of risk or residual risk and estimated costs.

(ii) Workpaper of Key Controls. Risk Assessment and Corrective Action which shows:

processes and related exposures and resources with calculated likelihood, impact, controls corrective action priority, position responsible to implement and astimated and actual costs.

(ui) Consequences of Interruption - overview of key placesses grouped by level by process, which shows

resources used by each process and sub-process with the agentical period the resource is required for \$7.000 agent the dark and maximum sost of working regulations resource.

20

5

10

15

25

30

the estimated time to restore the resource.

the estimated loss of market or revenue.

the estimated loss of property or equipment.

the calculated maximum potential loss (NIPL), the individual MPL of each process, and financial risk factors in currency and as a powentage.

Although the invention has been described with reference to a business organisation and the problems of managing that organisation it should be appreciated that the invention could have application to other kinds of systems. For instance, the invention could be applied to the maintenance of sophisticated piece of machinery such as a power station. The objectives in this case might be to maintain production within a specified range, and the risks might include by addown of particular items of equipment. The control output might be the provision of service reports, and the invention could automatically switch to auxiliary equipment when the risk of continued operation of any piece of equipment becomes too high.

5

15

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive

The state of the s

(a) The second of the second of the project of the contract of the second of the se

and the angle of the angles with a standard of the angles of the angles

ř

#### THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of using a computer equipped with a relational database to provide control output to address the threats conficulting a system or organisation, comprising the steps of:

creating a series of relational database entities which describe the system:

analysing the system to derive data relevant to the entities; and reporting from the database to produce the control output; wherein the entities and data concern the following:

the objectives of the system arranged in hierarchies and are each labelled to identify their position in the hierarchies and are each the processes of the system arranged in hierarchies and are each labelled to identify their position in the hierarchy: the resources used to perform the processes: the locations, persons and positions involved with the objectives processes and resources;

the risks those processes and resources are subject to; the consequences should those risks materialise; the controls which mitigate the risks; and

each combination of objective, process and risk linked to the consequence, resource, control and recommendation entities; and wherein:

the analysis involves the use of the combinations of objective.

process and risk, reporting involves a link between the consequences and assessment entities:

and

0

5

5

10

the control output includes a list of the exposures and scenarios which have an unacceptable risk associated with them.

2. A computer system for providing control output to address the threats confronting a system or organisation, comprising:

a computer equipped with a data input means, a data processor and a relational database in which there are created a series of relational database entities which describe the system:

wherein the entities and data concern the following:

the objectives of the system arranged in hierarchies and are each labelled to identify their position in the hierarchy; the processes of the system arranged in hierarchies and are each labelled to identify their position in the hierarchy; the resources used to perform the processes; the locations, persons and positions with the objectives processes and resources;

processes and resources.

The risks those processes and resources with subject to:

The consequences slibuld those risks materialise:

The controls which mitigate the risks and observations to the risks and observations.

each combination of objective, process and risk linked to the consequence, resources, control and recommendation entities; and wherein the processor accesses the relational database; analyses data relevant to the entities using the combinations of objective, process and risk; and reports the control output using a link between the consequence and assessment entities to produce a list of the exposures and scenarios which have an unacceptable risk associated with them.

- O 3. A method of using a computer equipped with a relational database to provide control output to address the threats confronting a system or organisation substantially as described with reference to the drawings and example.
- 5 4. A computer system for providing control output to address the threats confronting a system or organisation substantially as described with reference to the drawings and example.

Dated this 20th day of March 1998

5

10

5

BERGMAN VOYSEY & ASSOCIATES
PTY LIMITED
Patent Attorneys for the Applicant:

F.B. RICE & CO.

#### TO WHAT HE REPORT ABSTRACT

and the wall of his amount of a guilt to many policy

1900年 - 1900年 -

and the contract the property of the property of the first transfer of the contract of the con

This invention concerns a method using a computer to provide risk based control output. In another aspect it concerns a computer system for use in risk based control. Both the method and system require a relational database to provide control output to address the threats confronting a system or organisation. A series of relational database outities which describe the system are created. The system is analysed to derive data relevant to the entities, the analysis involves the use of the combinations of objective, process and risk. A report is obtained from the database to produce a control output, the report involves a link between the consequences and assessment entities. The control output includes a list of the exposures and scenarios which have an unacceptable risk associated with them.

ur madanti kanadarika u manar menegangan mengin giber ngisika angin pengin pengin mengangan mengin mengin men ngi dalamba angini kanadarika ngin kanadari dalam mengin berkan mengin berkangan dalamban pengin dalam mengin nginangan nginan menginggan ngin menghari dalam mengin berkan mengin berkan mengin dalam mengin berkangan mengin

一种独立是一个一种,"我们就是一种行业对于

AMERICAN SERVICE OF A MARKET SERVICE OF AMERICAN SERVICE OF A MARKET SERVICE OF A MARK

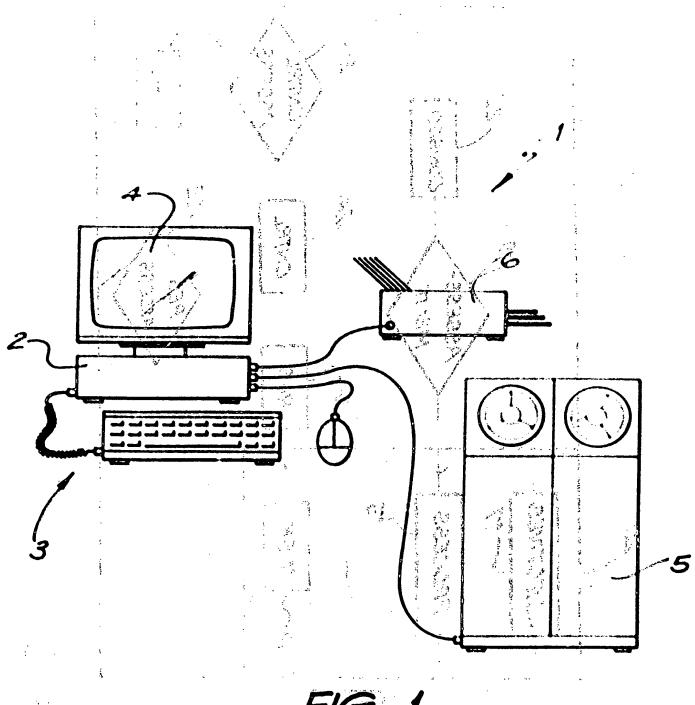
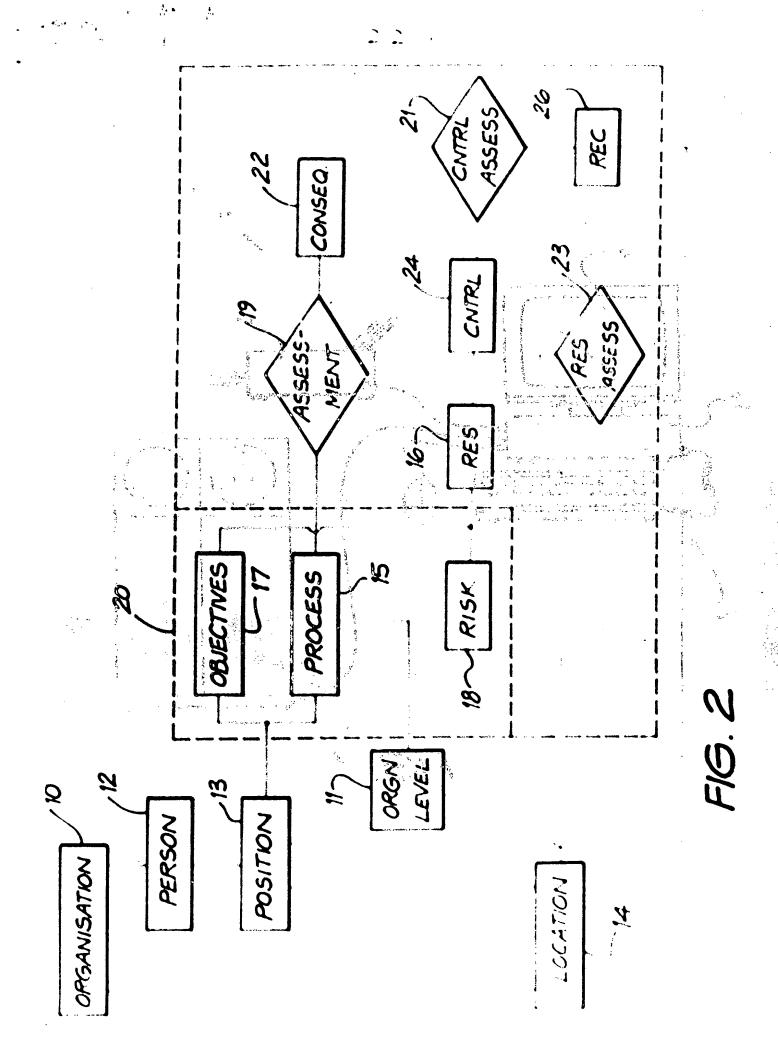


FIG. 1

And the second second



4

|  | ·   |
|--|---|
|  | Maria de la companya  |
| processor and a contract of the contract of th |   |
| 大学 (1995年) - 大学    |   |
| the control of the state of the control of the control of the  |   |
| With the first the first of the side of th | FIG. VII VII VII Seedin Like S    |
| The following of the following of the contraction o | TONG BOOK JEANS CONTRACTOR OF THE STATE OF T    |
|  |   |
|  | NO SECURIOR SERVICE DE LA COMPANION DE LA COMP    |
| ្ត<br>ក្រុស សេលក់ខែទេស (១០១០០០ នេះ ១៩១១៩១៩០០) ខេត្តបានបានការការិធីទី   | r<br>Tre Treatment of the  |
| nan ni saki ya sakaria wasa  | 2010 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1  |
|  | HORITAN AMERIKAN KATALAN PARTAMBAN MANAMBAN MANA    |
| •  | The second state of the Spring Blanck Rower & Massey<br>for State Spring Second States and Theophones, NY 1978 December 1981 Blanck States and Sta |
|  |   |
|  | ;<br>!  |
|  |   |
|  |   |
|  | e<br>PACK CEN GOVERNBEAR BURGER BELLEVING BARMER VER LINGTON (1988)   |
| ***  | er in de la transferior de la company de<br>La company de la company d  |
| · · · · <del>· - ·</del> · ;   |   |
|  | Ruth and Amiliana color of section in the first law and a section of the first law and a section of the section    |
|  | Transfer of the second of the     |
| The same of the sa | State of the control     |
|  |   |
|  | સ્ત્રિક કે  |
|  |   |
| The second section of the second section is a second section of the second section of the second section is a second section of the section of the second section of the section  |   |
|  |   |
|  | :   |
|  |   |
| t see see see see see see see see see se   |   |
|  |   |

,